

NOTES ON THE LIFE HISTORY AND ECOLOGY OF  
*CALLIGRAPHA SPIRAEAE* (SAY)  
(COLEOPTERA: CHRYSOMELIDAE)

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ABSTRACT

The life history and ecology of *Calligrapha spiraeae* (Say) on *Physocarpus opulifolius* in Virginia are discussed. Eggs are laid on the underside of the food plant leaves, on which the first 3 larval instars feed. Third instar larvae enter soil where a fourth larval molt occurs, preceding pupation. Adults emerge in early August, over-winter, and mate in the spring. One egg parasite was observed, and mention is also made of possible larval and adult parasites.

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Life history studies that have been done on the chrysomelid genus *Calligrapha* have been largely on the few species that feed on economically important plants and which under certain conditions can become serious defoliators. Earlier works on these beetles include: Hegner (1908, 1910), observations on the life histories of *C. multipunctata* (Say), *C. bigsbyana* (Kirby), and *C. lunata* (Fabricius); Whitehead (1919, 1920) additional data on *C. bigsbyana*, based on rearing 2 egg clusters; Ainslie (1925), on *C. pnirsa* Stal; Daviault (1941), an excellent study on *C. multipunctata* var. *bigsbyana*; and Dean (1946), on *C. scalaris* LeConte.

*Calligrapha spiraeae* (Say) feeds on *Physocarpus opulifolius* (L.) (Rosaceae; common name, ninebark) and can be readily reared on leaves of this plant. This plant flourishes along banks of water courses and especially on rocky talus slopes. The distribution of this plant includes the upland regions of eastern United States (Fig. 1). The distribution of the beetle is not well known. I have learned through personal communications with Robert H. Perry and E. C. Becker that the collections of the USA and Canada have specimens of this beetle from Quebec and 7 eastern states and I have collected specimens in Virginia and North Carolina (Fig. 1).

Laboratory rearing methods were similar to those used by Hegner (1908). Adults emerge during April and, after a short feeding period, begin mating. The male may remain mounted on the female for as long as 6 hours. Females lay a double row of eggs on the underside of the leaves of the food plant. About 1 minute is required to lay each egg. Egg laying by each female lasts an average of 10 days, about 60 eggs the average number laid. Incubation time for the eggs is 7 days. The first 3 larval instars last 7 days apiece, on leaves of the food plant. The fourth larval instar lasts 10 days, does not feed, occurs in the soil, and leads to the pupa which also has a duration of 10 days. The new adults emerge from the soil in late August, feed for 2 weeks, re-enter the soil to overwinter, and mate during the following spring. The adults and newly hatched larvae do not hesitate to devour the eggs of their own species.

The small pteromalid egg parasite, *Erixestus winnemana* Crawford, is known to parasitize other *Calligrapha* (Daviault, 1941) and was first described from specimens obtained from the eggs of *C. bigsbyana* and *C. scalaris* (Crawford, 1910). Parasitized eggs of *C. spiraeae* can be readily recognized since outlines of the developing wasp can be seen in such eggs. The life cycle of this wasp is 7 days, allowing several generations to be produced in each summer.

Daviault (1941) reported a braconid wasp as a parasitoid of larvae and the tachinid fly, *Doryphorophaga dorsalis*, as a parasite of the adult of *C. multipunctatus* I found neither of these associated with *C. spiraeae*, but it seems reasonable to assume that these parasites do attack this beetle also.

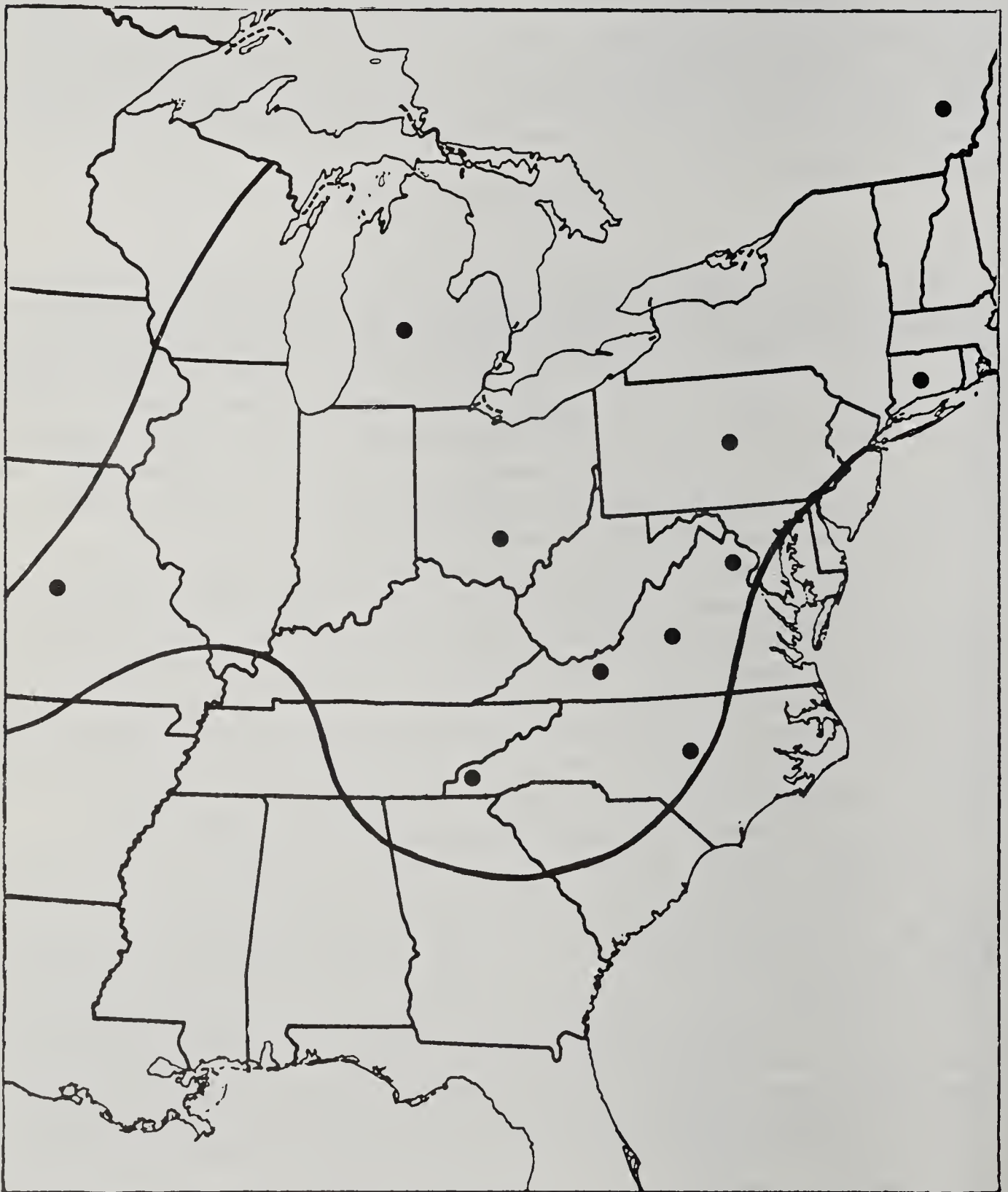


Fig. 1. Distribution of *Physocarpus opulifolius* in the United States (heavy line) and known localities for *Calligrapha spiraeae* (dots).

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OBSERVATIONS ON THE MATING BEHAVIOR  
OF *PSEUDOCOTALPA GIULIANII* HARDY

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On April 29, 1974, in company with T. D. Eichlin, I had the opportunity to observe an evening's activity of *Pseudocotalpa giulianii* Hardy at Big Dune, Nye County, Nevada.

Throughout the afternoon, scattered individual adults were uncovered at depths of 4 to 6 inches as we sifted the sand beneath Creosote bushes (*Larrea divaricata* Cav.). No adults were active until late afternoon, about 1 hour before dark. Our first indication of activity was the slow flight of solitary individuals hovering near the tips of Creosote plants. First activity was at least 1/2 hour earlier than I have observed for *Pseudocotalpa andrewsi* Hardy and *P. sonora* Hardy. The number of individuals rapidly increased until they could be seen in every direction at the tops of the Creosote bushes.

Females were on the creosote branch tips, where they were evidently emitting a pheromone. The males hovered downwind from the tips of the branches, attempting to locate the female.

Large numbers of males were hovering downwind from branches where no female was present. Evidently there was pheromone on the branches, probably from the previous night (because our observations were made during the earliest minutes of the emergence, when there had probably not been sufficient time for a female to have moved to the plant, mated, and